



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICANT: Dagobert M. De LEEUW et al.
SERIAL NO.: 09/817,107 EXAMINER: Kiesha L. Rose
FILED: March 26, 2001 ART UNIT: 2822
FOR: INTEGRATED CIRCUIT PROVIDED WITH A SUBSTRATE
AND WITH A MEMORY, TRANSPONDER, AND METHOD
OF PROGRAMMING A MEMORY

Assistant Commissioner for Patents
Washington, DC 20231

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REQUEST FOR RECONSIDERATION

Dear Sir:

In response to the Final Office Action dated February 13, 2003, reconsideration of all grounds of rejection and rejection, and allowance of this application are respectfully requested in light of the following remarks.

Initially, Applicants note that new formal drawings are being prepared for the approved drawing changes and will be submitted shortly.

Summary of the Rejections:

- (1) Claims 1-11 stand rejected under 35 U.S.C. §112, second paragraph.
- (2) Claims 1-11 stand rejected under 35 U.S.C. §102(e) as allegedly being anticipated by Chang et al. (U.S. 6,159,842, hereafter "Chang").

Applicant's Traversal:35 U.S.C. §112:

With regard to the Examiner's query regarding the programmed and non-programmed state, claim 1 was previously amended to recite, *inter alia*, that the "organic material is programmed by heating the memory element to a transition temperature that reduces conduction through predetermined portions thereof." Applicant respectfully submits that the heating creates a structural change in the conductivity of the organic material.

With regard to the Examiner's query regarding what the memory element is, Applicants note that Claim 1 defines the memory element as including an electrically conducting organic material having a non-programmed and a programmed state, wherein the organic material is programmed by heating the memory element to a transition temperature that reduces conduction through predetermined portions thereof, a first electrode (26) and a second electrode (28). The first (26) and the second electrode (28) are interconnected in the non-programmed state by an electrically conducting bridge (27) which comprises the organic material. The bridge (27) is at least partly interrupted in the programmed state so that conduction therein is reduced from when the bridge is in the non-programmed state.

With regard to the Examiner's queries regarding the conductor track and the bridge, a conductor track (e.g., element 23, shown in Fig. 1) is separate from the bridge 27, and perpendicularly arranged, wherein a portion overlaps to dissipate heat away from the bridge. It is noted that Claim 3 recites that the integrated circuit defined by Claim 1 further comprises the electrical conductor track.

It is also noted that claim 8, which depends from claim 7 (that depends from claim 2 — not Claim 3) recites that the bridge “is adapted to function as the conductor track” this being a different embodiment of the invention than recited in claim 3. Applicants refer to the extremely narrow bridge 27 in Fig. 2 having a width 13 smaller “than the first transistor electrode (21) of the first transistor (20) and than the first electrode (26) of the first memory element (30).” Thus, the small width 13 of the bridge prevents heat dissipation.

With regard to the Examiner’s query regarding how the bridge will be interrupted in a programmed state if the organic material is just heated — how does a metal layer get interrupted, Applicants note the following. In the embodiment described on page 8, line 29, to page 9, line 30, of the specification, it is described that:

the laminate 12 is limited thereby. The substrate 11 in this embodiment further comprises a porous layer 1 and a covering layer 2. The low mass of the porous layer 1 implies that the substrate 11 has a low absorption capacity for heat, so that the heat transfer from the bridge 27 to the laminate 12 is further limited.

...
For programming, a voltage of 25 V is applied across the first memory element 30 for approximately 0.01 s. The current, which is at a level of 5×10^{-6} A at a voltage of 0.1 V, rises to approximately 10^{-4} A at the voltage of 25 V. The bridge 27 is interrupted thereby, and the current drops to 10^{-10} A. The achieved temperature in the memory element is approximately 200 °C. The bridge 27 is interrupted transversely to the longitudinal direction 14 of the bridge 27. The electrical conductor track 23 in the layer 3 also acts as a preheating element for the bridge 27 during programming of the memory element 30.

It is also noted that in regard to “interruption of the bridge,” the embodiment described on page 2, lines 20-25, of the specification states that:

[t]he result of programming of the IC according to the invention is inter alia a reduction in the conduction through the first memory element, so that electrical reading of the first memory element detects a transition from "1" to "0". The reduction in conduction is caused by the at least partial interruption of the bridge. That is to say, *a cross-section through the bridge transverse to the longitudinal direction of the bridge will be smaller after programming than it was originally.* (emphasis added)

It view of the above comments, it is respectfully submitted that of all grounds of rejection under 35 U.S.C. §112, second paragraph are overcome. Reconsideration and withdrawal of this ground of rejection are respectfully requested.

35 U.S.C. §102(e):

Applicants again respectfully submit that none of the instant claims are anticipated by Chang. It is not clear to Applicants from the Final Office Action that the amendments and comments (made in the Amendment dated November 14, 2002) were fully considered. In this regard, the "Response to Arguments" section of the Final Office Action seems to solely focus on the Section 112 rejection. While this section does state that the arguments were fully considered but were deemed not persuasive, the MPEP 707.07(f) essentially states that the Examiner should state the reasons for maintaining his or her position following an argument by Applicant, i.e., answer the substance of the argument.

Nevertheless, Chang discloses a device that uses via holes (see Abstract) for programming that are then filled with tungsten (Chang, column 4, line 66 to column 5, line 15).

In contrast to prior art devices such as Chang, and that disclosed by Applicants in the specification at page 1, line 15 to page 2, line 3, the presently claimed invention (recited by instant claim 1) recites that “the organic material is programmed by heating the memory element to a transition temperature that reduces conduction through predetermined portions thereof” (please also see specification, page 2, lines 20-27, and 34). Such programmed structure is patentably distinguishable from mechanical tapped via holes of the prior art.

For all the foregoing reasons, it is respectfully submitted that none of the present claims are anticipate by Chang as this reference fails to disclose all of the elements recited by Applicants’ claims. Nor would a person of ordinary skill in the art have found any of Applicants claims obvious in view of Chang. Reconsideration and withdrawal of this ground of rejection are respectfully requested.

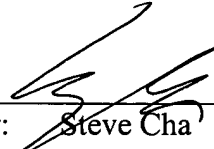
For all the foregoing reasons, it is respectfully submitted that all grounds of objection and rejection have been overcome. A Notice of Allowance is respectfully requested.

Should the Examiner deem that there are any issues that would be best resolved by a telephonic communication, please contact Applicants' representative at the telephone number listed herein below.

Respectfully submitted,

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Registration No. 42,079

Date: April 16, 2003



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